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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,262	03/05/2002	Steven L. Stewart	USA/01/012	6437
33249	7590	04/28/2004	EXAMINER	
RESOLUTION PERFORMANCE PRODUCTS LLC			CHANG, VICTOR S	
ATTN: LISA JONES			ART UNIT	
1600 SMITH STREET, P.O. BOX 4500			PAPER NUMBER	
HOUSTON, TX 77210-4500			1771	

DATE MAILED: 04/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

mk

<b>Office Action Summary</b>	<b>Application No.</b> 10/091,262	<b>Applicant(s)</b> STEWART ET AL.	
	<b>Examiner</b> Victor S Chang	<b>Art Unit</b> 1771	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-6,8-28 and 62-70 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,8-28 and 62-70 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. The Examiner has carefully considered Applicants' amendments and remarks filed on 3/19/2004. Applicants' amendments to claims 1, 3, 5, 6, 8-14, 29-31, 33, 34 and 36, cancellation of claims 2, 7, 39-61 and 71-164 have all been entered.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Rejections not maintained are withdrawn.

### ***Response to Amendment***

4. Claims 1, 3-6, 8-22 and 62-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schrock et al. (US 6541872) in view of JP 08250835, substantially for the reasons set forth in section 7 of Paper No. 120403, together with the following additional observations.

Applicants' argument that "what is known in the art to manufacture the surface mount electronic device differs significantly for what is known in the art to attach a manufactured surface mount electronic device to a PCB. For example, in the manufacture of a surface mount electronic device, a thermoset or thermoplastic is selected to improve die package reliability by bridging the thermo-expansion differential between the materials comprising the integrated circuit (IC) and the printed circuit board therein. Thermoplastic adhesives are not utilized in the art to attach mount electronic devices to PCBs" (Remarks, page 10, bottom paragraph) has been carefully

Art Unit: 1771

considered, but is not persuasive. In response to Applicant's argument that in manufacture of a surface mount electronic device the thermoset or thermoplastic is selected to improve die package reliability which is required by Applicants' invention, it must be noted that Schrock discloses the invention as claimed, and the fact that it discloses additional material property not claimed is irrelevant. Further, the Examiner repeats (see Paper No. 120403, page 5) that although Schrock's teaching is mainly directed to form a semiconductor package with an organic substrate such as PCB, it is noted that JP 08250835 (English Abstract), which teaches that an LSI package having metallic bumps (i.e., a BGA package) can be connected to a printed wiring board with an intermediate film-like sheet of an organic resin having a melting point and coefficient of thermal expansion about the same as the metallic bumps (i.e., a thermoplastic adhesive as the intermediate layer). As such, it would have been obvious to one of ordinary skill in the art to combine the teachings of Schrock and JP '835, and to attach a semiconductor package to any other PCB by applying a suitable thermoplastic adhesive tape to the bottom surface of the semiconductor package such as a BGA package, motivated by the desire to provide a bonding layer to surface mount electronic devices, and with a reasonable expectation of success based on the prior art.

With respect to Applicants' response arguing that "The thermoplastic adhesive utilized in the present invention is advantageous in that it provides an increased resistance to hydrothermic cycling and/or mechanical impacts to the assembly when compared to known thermoset under-fills" (Remarks, page 11, second full paragraph), the Examiner repeats (see Paper No. 120403, page 4) that Schrock teaches that the

Art Unit: 1771

adhesive tape has an adhesive such as pressure sensitive adhesives, thermoplastic adhesives, thermoset adhesives or the like (column 3, lines 50-52). As such, clearly Schrock's teaching encompasses the instantly claimed invention, Applicants' argument to the contrary notwithstanding. Further, the Examiner notes that Applicants appear to have admitted that Schrock's selected thermoplastic with suitable the thermo-expansion differential between the materials also improves the reliability (resistance to hydrothermic cycling).

With respect to Applicants' argument that "Like Schrock, JP '835 is directed to the manufacture of a surface mount electronic device. The present claim 1 ... differs from JP '835 in that the thermoplastic adhesive does not have a CTE or a melting point nearly equal to the solder" (Remarks, page 12, first paragraph), the Examiner repeats that it is irrelevant the prior art discloses additional material property not claimed, as set forth above. Further, the Examiner repeats that JP '835 expressly teaches, in Figs (a)-(d), a method for surface mounting an LSI package to a printed wiring board, and the LSI package clearly reads on the elements of claim 1 of instant invention, Applicants' argument to the contrary notwithstanding.

5. Claims 23-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schrock et al. (US 6541872) in view of Narushima et al. (US 6426138), substantially for the reasons set forth in section 7 of Paper No. 120403, together with the additional observations as set forth above.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 1771

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor S Chang whose telephone number is 571-272-1474. The examiner can normally be reached on 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel H Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DANIEL ZIRKER  
PRIMARY EXAMINER  
GROUP 1300

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